UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,983,360 B2
APPLICATION NO. : 09/943586
DATED : January 3, 2006
INVENTOR(S) : Neal Andrew Crook et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Delete the title page and substitute therefor the attched title page.

Replace informal drawing sheet 1 with the attached formal drawing sheet 1.

Replace informal drawing sheet 2 with the attached formal drawing sheet 2.

Replace informal drawing sheet 3 with the attached formal drawing sheet 3.

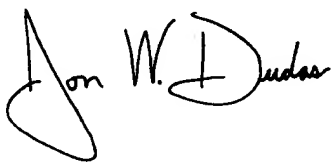
FIG. 4, decision box 418, change "none" to -- no data --.

Replace informal drawing sheet 4 with the attached formal drawing sheet 4.

This cetificate supersedes Certificate of Correction issued September 18, 2007.

Signed and Sealed this

Twenty-third Day of October, 2007



JON W. DUDAS
Director of the United States Patent and Trademark Office

(12) **United States Patent**
Crook et al.

(10) **Patent No.: US 6,983,360 B2**
(45) **Date of Patent: Jan. 3, 2006**

(54) **PROGRAM LOADING MECHANISM THROUGH A SINGLE INPUT DATA PATH**

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(73) Assignee: **Micron Technology, Inc., Boise, ID (US)**

(*) Notice: **Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 737 days.**

(21) Appl. No.: **09/943,586**

(22) Filed: **Aug. 30, 2001**

(65) **Prior Publication Data**

US 2003/0046523 A1 Mar. 6, 2003

(51) **Int. Cl.**
G06F 9/445 (2006.01)
G06F 9/24 (2006.01)

(52) **U.S. Cl.** **712/229; 712/225; 712/227**

(58) **Field of Classification Search** 712/225, 712/227, 229; 717/177, 178; 709/221, 222; 710/10, 14; 380/249
See application file for complete search history.

(56) **References Cited**

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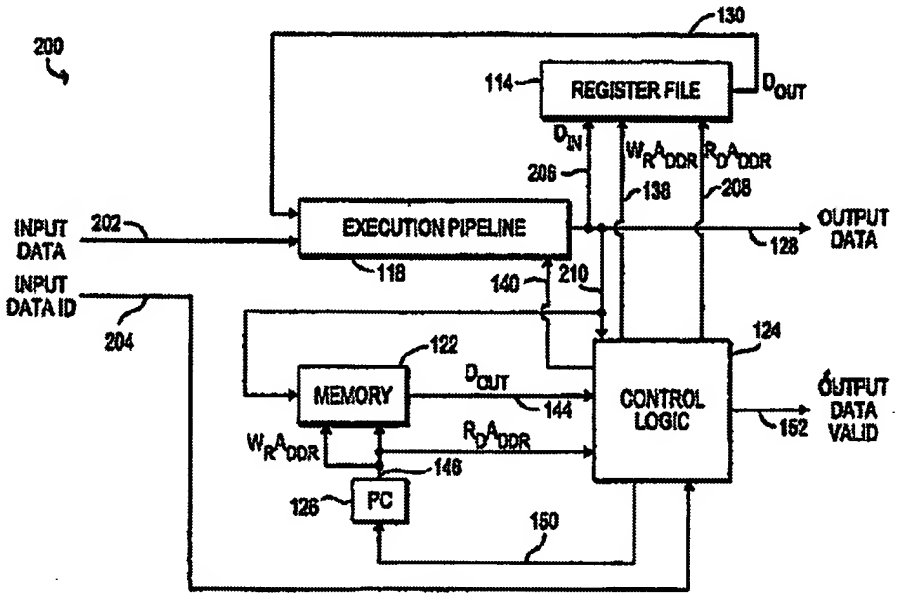
(57) **ABSTRACT**

Pieces of input data, which can be either setup data or program data with an associated identifier, are provided to a processing engine through a single input data path. After a system initially resets, the processing engine runs in setup mode. When an identifier for setup data is detected, input data is passed unchanged through an execution pipeline to control logic, which executes a setup program. The setup program loads a program counter, a memory, a register file counter, and a register file. When an identifier for program data is detected, the processing engine automatically switches to run mode and input data is processed in the execution pipeline. The processing engine automatically switches between run mode and setup mode depending on the identifier. Using a single input data path decreases hardware complexity and allows input data to be processed without external control logic.

34 Claims, 4 Drawing Sheets



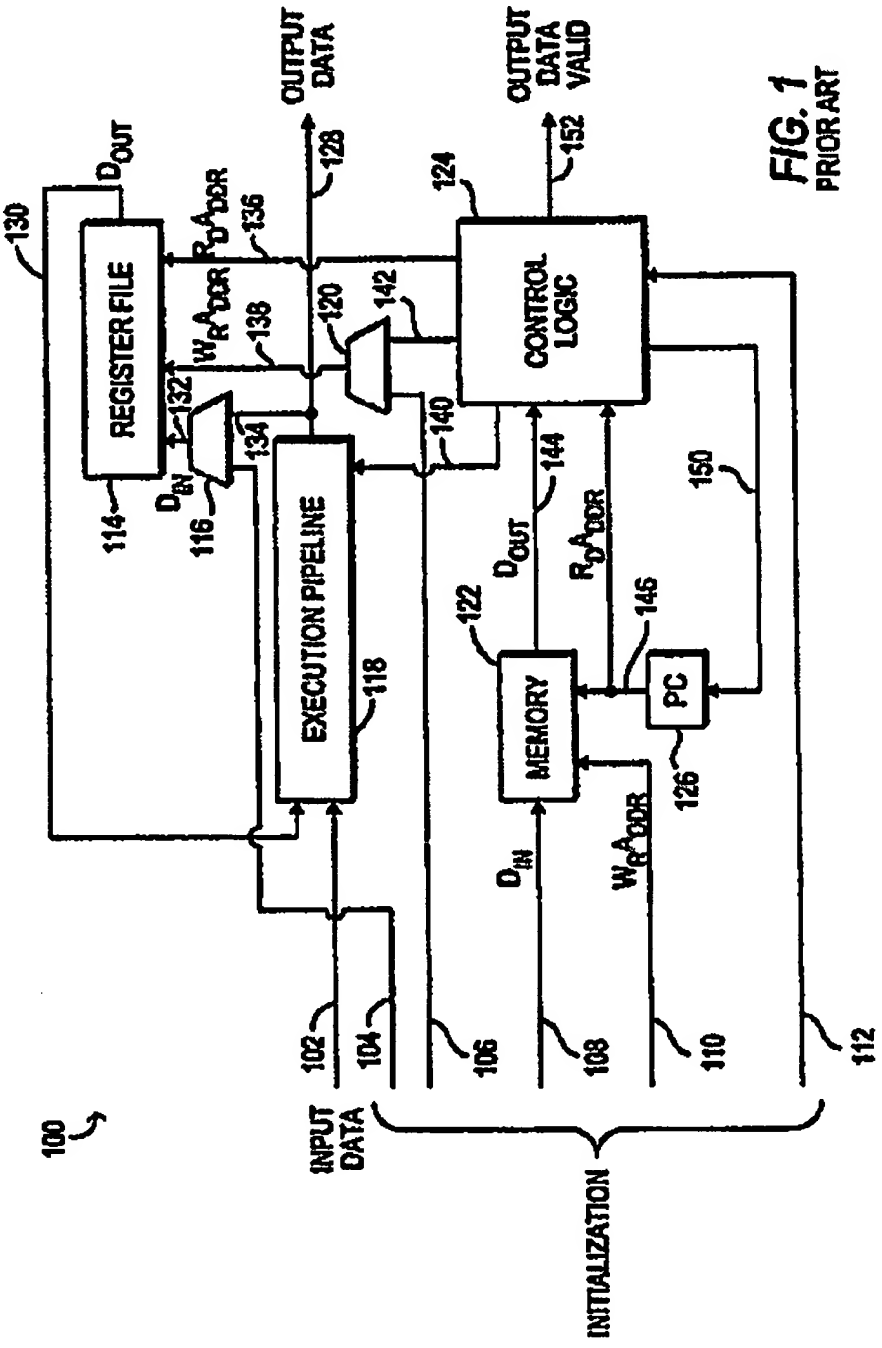


FIG. 1
PRIOR ART

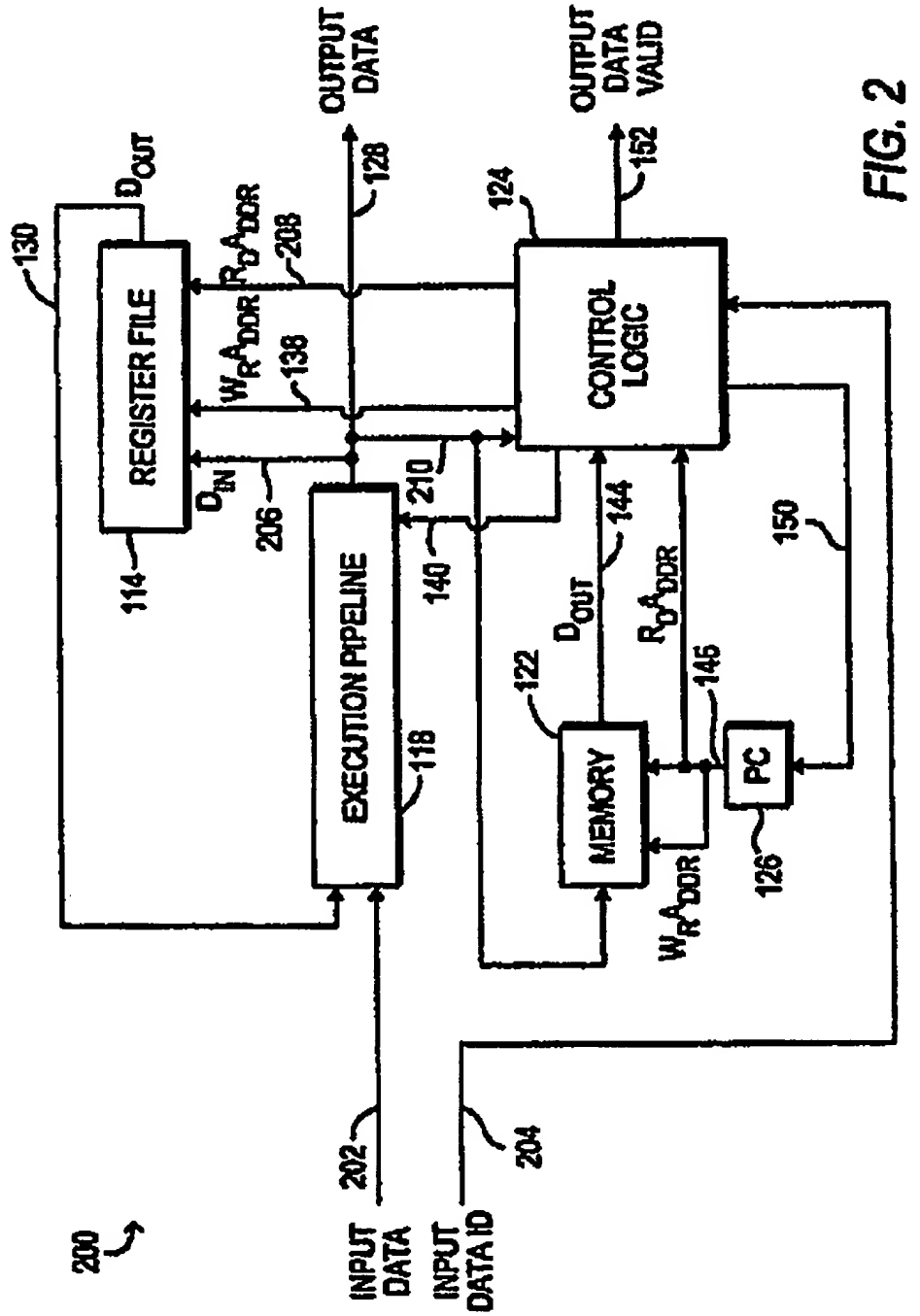

OUTPUT DATA
OUTPUT DATA VALID
128
152
124
130
D_{OUT}
R_DA_{DDR}
208
REGISTER FILE
CONTROL LOGIC
W_RA_{DDR}
138
D_{IN}
206
210
114
EXECUTION PIPELINE
140
144
150
D_{OUT}
R_DA_{DDR}
122
145
MEMORY
PC
126
W_RA_{DDR}
118
202
204
200
INPUT DATA
INPUT DATA ID

FIG. 2

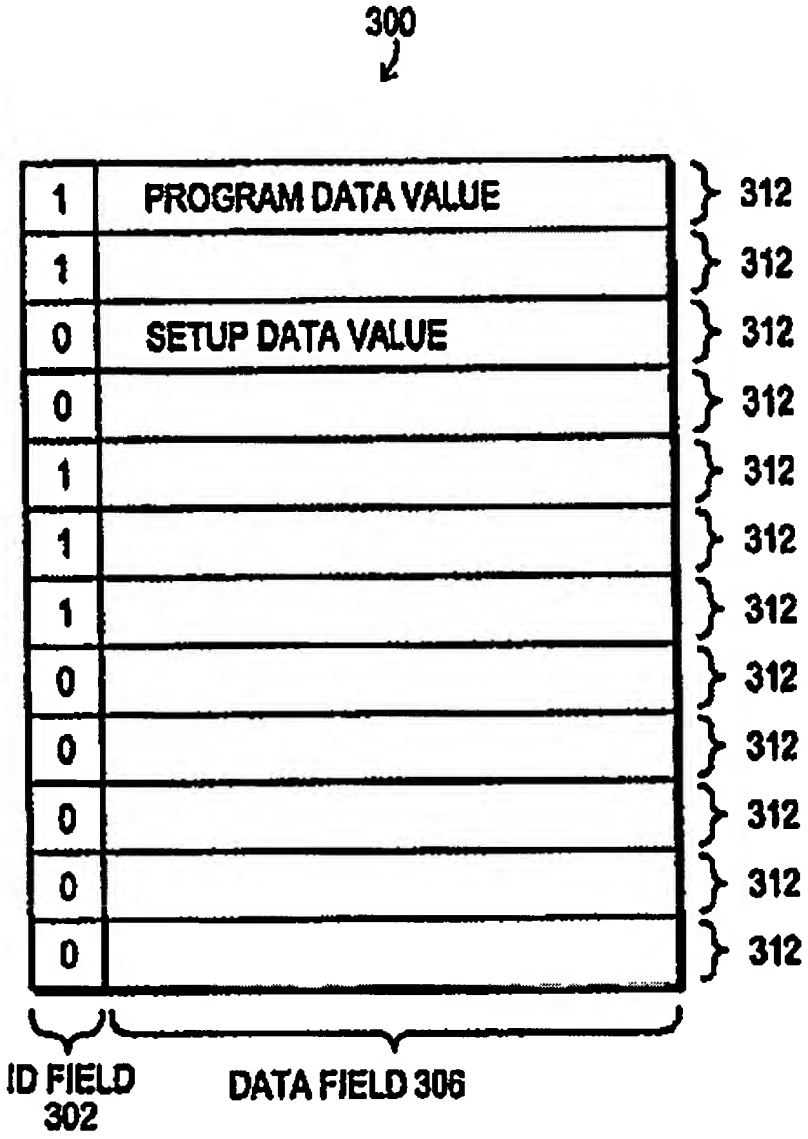

300
1
PROGRAM DATA VALUE
1
0
SETUP DATA VALUE
0
1
1
1
0
0
0
0
312
ID FIELD 302
DATA FIELD 306

FIG. 3

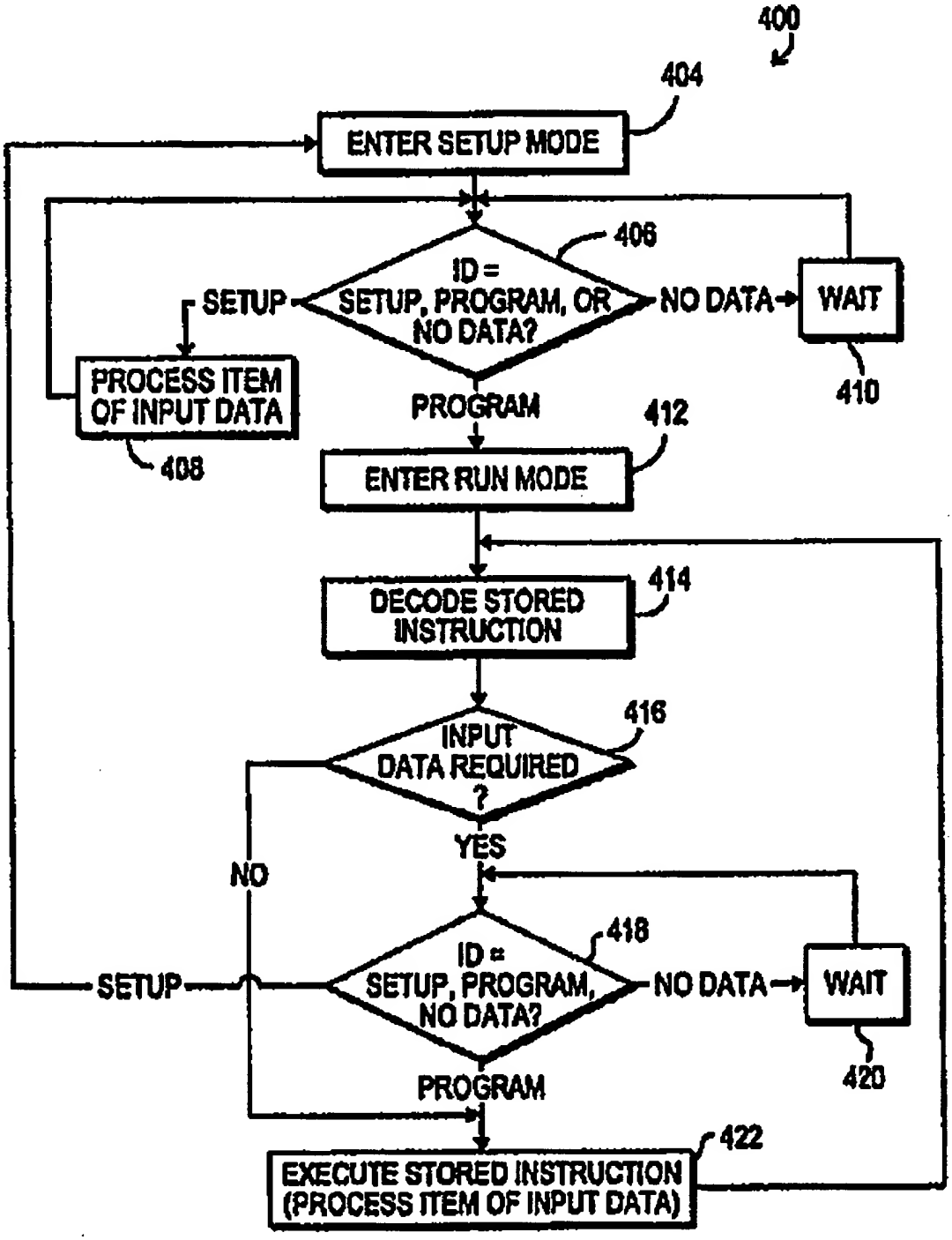

400
404
ENTER SETUP MODE
406
ID = SETUP, PROGRAM, OR NO DATA?
SETUP
NO DATA
WAIT
410
PROCESS ITEM OF INPUT DATA
408
PROGRAM
412
ENTER RUN MODE
414
DECODE STORED INSTRUCTION
416
INPUT DATA REQUIRED ?
YES
NO
418
ID = SETUP, PROGRAM, NO DATA?
SETUP
NO DATA
WAIT
420
PROGRAM
422
EXECUTE STORED INSTRUCTION (PROCESS ITEM OF INPUT DATA)

FIG. 4